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physiological method, but that *all* methods are admissible, provided they lead to the *one* physiological goal—the elucidation of life. The second chapter treats of the chemical and physical composition of living substance,—giving the elements of its morphology,—and of life and death ; the third of the elementary phenomena of life, metabolism, cellular development, and the vital forms of energy; the fourth of the present and past conditions of life, biogenesis, and the history of death ; the fifth of cellular irritation ; the sixth and last of the physical machinery of life, cellular mechanics, and the economy of cellular states. The book is a portly one, richly illustrated (268 cuts), and contains full and adequate descriptions of the newest laboratory appliances.

As will be seen, the plan of the work leaves nothing to be desired, in everything that goes to constitute a historical and systematic presentation of the rudiments of general physiology. Much of the material is gathered from scattered and mostly inaccessible sources, and all is subjected to examination under new synthetic points of view. Stress is laid upon the importance of the comparative method as employed by Johannes Müller, to whose memory the work is dedicated. As the task here undertaken has never been attempted before on so extensive a scale and as an organic whole, the author asks his colleagues' forbearance and solicits from them rigorous and outspoken criticism. That criticism, however, is not for us. Professor Verworn's work supplies a profound want in the general literature of this subject, and will be of valuable assistance, by its easy style, not only to students and professors of physiology, but also to the cultured reader and scientist generally, be he philosopher or physician, botanist, zoölogist, or what not. It remains to state that Professor Verworn contributed an article to *The Monist*, somewhat over a year ago (April, 1894), on "Modern Physiology," which he has incorporated in the present work, and to which the reader may be referred for a succinct statement of his views.

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A HISTORY OF MATHEMATICS. By *Florian Cajori, Ph. D.* New York and London : Macmillan & Co. 1895. Pages, 422. Price, $3.50.

There is no subject with which history as a rule is so little associated, nor any which in some of its parts derives so much profit from it, as mathematics. The history, for example, of the origin and growth of the calculus of variations is imperatively necessary to a profound apprehension of its principles. The chief function, however, of the history of mathematics, as a constituent of instruction, or collateral reading, is the stimulus which flows from the human and romantic features that adhere in such variety and number to the development of the science, as also the heuristic glimpses which it affords of the way in which knowledge generally is constituted. Intellectually nothing could be more refreshing than the anecdotes which De Morgan, say, recounts in his mathematical biographies of the wit and idiosyncrasies of the giants of mathematical thought, and physically, no doubt, many a lean-faced pangeometric youth will be spurred on to wholesome athletic efforts by the story of the thirteen duels which John Bolyai accepted, fought, and won successively with the mere interlude of a violin-solo. On the other hand, although neither our use nor our understanding of logarithms is helped by the knowledge that Napier conceived the idea of them before exponents were used, and developed them wholly from geometrical and fluxional considerations, yet as an indication of the way in which science has grown up, nothing could be more instructive.

On the first of these points Professor Cajori lays some stress, not omitting to emphasise also the importance of the history of mathematics as a repository of the errors of the past, which if known can be avoided.

Professor Cajori's book is, as he calls it, a *brief general* history of mathematics. One must not expect to find in it a new treatment nor the embodiment of new views regarding the theory or the mode of development of knowledge. He relies, on this score, and especially in the earlier parts of the work, on the books and opinions of other investigators rather than on the subject-matter itself, and in some instances is uncritical on the philosophical side of the questions. For example, on that old *crux*, Why the Greeks made no progress in Mechanics, Physics, etc., he cites Whewell's theory that it was due to their not having "distinct and appropriate ideas"; which, since that is the very problem, is not calculated to throw much light on the ancient stagnancy in science. Perhaps, also, more references to the literature which contests the philosophical foundations of the Gauss and Riemann mathematical metaphysics might be given, for nothing, perhaps, needs more the curb of philosophical criticism than just this branch of speculation. But a small book cannot be an encyclopædia of the formal sciences, and our remarks, far from aspersing the character and merit of Professor Cajori's work, will go merely to show its scope and purpose. Its style is vivid and terse, and in mechanical execution and arrangement of matter the book attains a high standard. Undoubtedly, as a manual and handy book of reference it will fulfil an important office. More especially is this true of the chapter entitled "Recent Times," where, in contradistinction to the early history, much valuable information has been brought together which could hardly be found elsewhere in so compact a form, if at all, in any one book. This is its really valuable feature. It remains to be added, and as forcibly as possibly, that for a book designed "to be acceptable to teachers and students" the price is much too high, and that apparently without justification. T. J. McCormack.

Psychology for Teachers. By *C. Lloyd Morgan*, Principal of University College, Bristol. London: Edward Arnold. Pages, 251. Price, 3s. 6d. net.

The greater part of the fundamental doctrines of this latest book of Professor Morgan's are contained in his *Introduction to Comparative Psychology*, reviewed by us in the last *Monist*; and all the excellent qualities of lucidity and animation which marked that work are again displayed here. The book is designed for teachers and aims to show, by a running exposition of the salient points of psychology, how the practical problems of education can be elucidated and furthered by attention to the